REMARKS

Applicants initially note that claim for foreign priority and receipt of the certified copies of the priority document filed in Patent Application No. 10/657,106 of which this application is a Continuation-In-Part, have not been acknowledged. Applicants hereby respectfully request that the Examiner clarify the record by acknowledging the claim for foreign priority and receipt of the certified copies of the priority documents.

Claims 1-9 are pending in this application. Applicants acknowledge, with appreciation, the Examiner's indication that claims 3, 4 and 6-8 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1, 2, 5 and 9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Canclini in view of Yasaitis and Wolf.

In the statement of the rejection, the Examiner asserted that Canclini teaches a semiconductor device including all the limitations recited in claim 1, except the limitation "field oxide film formed at the main surface of said semiconductor substrate," as recited in claim 1. However, the Examiner cited Yasaitis and Wolf, concluding that it would have been obvious to have a field oxide film in Canclini device. This rejection is respectfully traversed.

Applicants submit that the Examiner has not established a *prima facie* basis to deny patentability to the claimed invention under 35 U.S.C. §103 for lack of the requisite factual basis. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Based on the above legal tenet, Applicants submit that the proposed combination of Canclini, Yasaitis and Wolf, either individually or in combination, do not teach or suggest a semiconductor device including all the limitations recited in claims 1, 2, 5 and 9. Specifically, the proposed combination does not teach the limitation "said diode having its cathode including a first cathode region and a second cathode region..., and said second cathode region constituting, together with an anode region of said diode, a pn junction where Zener breakdown occurs," recited in claim 1.

The Examiner identified a deep n+ contact region 6 or an n+ type buried layer 3 as the claimed second cathode region (see Fig. 1 of Canclini). However, Canclini does not teach or suggest that n+ type buried layer 3 constitutes, together with an anode region 7, a pn junction where Zener breakdown occurs. Rather, the reference mentions, "bring into breakdown the Zener junction between the cathode region 5 and the anode region 7 of the triggering diode" (see column 3, lines 8-14) (emphasis added).

It is also submitted that the proposed combination does not teach or suggest a semiconductor device in which "said pn junction where the Zener breakdown occurs being distant from said field oxide film," recited in claim 1. The Examiner is silent on whether this limitation is taught by the proposed combination.

In one aspect, the claimed invention addresses a problem concerning increasing breakdown voltage of a diode. According to the specification, "the increase of the breakdown voltage is caused when electrons that are present in the depletion layer of the pn junction between the anode region and the cathode region are trapped in the field oxide film to expand the depletion layer of the pn junction" (page 4, lines 3-6) (emphasis added). By placing the pn junction where Zener breakdown occurs, distant from the field oxide film, the claimed invention solves the problem.

As the Examiner admitted, Canclini does not show a semiconductor device including a field oxide film, and of course, does not teach or suggest the above problem and any configuration to solve the problem. Therefore, even if it is assumed that having a field oxide film in Canclini's device would have been obvious as asserted by the Examiner, it is unreasonable to conclude that the proposed combination of Canclini, Yasaitis and Wolf teaches or suggests a semiconductor device in which "said pn junction where the Zener breakdown occurs is distant from said field oxide film for the reason set forth above."

More specifically, Canclini, Yasaitis and Wolf, either individually or in combination, do not teach or suggest a semiconductor device including "said diode having its cathode including a first cathode region and a second cathode region..., and said second cathode region constituting, together with an anode region of said diode, a pn junction where Zener breakdown occurs," and "said pn junction where the Zener breakdown occurs being distant from said field oxide film," recited in claim 1.

It may be said that a p type substrate 2 of Canclini corresponds to the claimed "semiconductor substrate," a metallization layer 12 corresponds to the claimed "first conductive layer," an n+ type region 5 corresponds to the claimed "cathode of the diode," and a p- type region 7 corresponds to the claimed "anode region of the diode."

Canclini teaches that n+ type region 5 is electrically connected to metallization layer 12 (the first conductive layer) and formed at the main surface of p type substrate 2 (the semiconductor substrate). Accordingly, n+ type region 5 corresponds to a "first cathode region" of claim 1. Further, since n+ type region 5 constitutes a pn junction where Zener breakdown occurs together with p- type region 7 (the anode region of the diode), n+ type region 5 also corresponds to the "second cathode region" of claim 1. In other words, Canclini discloses a single region (n+ type

region 5) that corresponds to the first cathode region and the second cathode region, recited in claim 1.

Accordingly, Canclini does not teach the first cathode region and the second cathode region that are provided as separate regions. That is, Canclini does not disclose the first cathode region or the second cathode region. Regarding the pn junction, Canclini clearly teaches in column 3, lines 8-14 that the pn junction where Zener breakdown occurs is constituted of p- type region 7 and n+ type region 5.

Moreover, Yasaitis and Wolf do not teach any one of the first cathode region and the second cathode region of claim 1.

In contrast, a semiconductor device recited in claim 1 includes, as separate regions, the first cathode region electrically connected to the first conductive layer and the second cathode region constituting the pn junction where Zener breakdown occurs together with the anode region. This configuration provides the following advantages: the impurity concentration of the first cathode region can be increased to reduce the contact resistance with the first conductive layer and the impurity concentrations respectively of the anode region, and the second cathode region can be decreased to prevent leakage of electric current.

Furthermore, the proposed combination of the references does not teach or suggest a positional relationship between the pn junction and the field oxide film. Therefore, the proposed combination does not teach the limitation "pn junction where the Zener breakdown occurs being distant from the field oxide film."

On the other hand, the claimed invention has the pn junction where Zener breakdown occurs that is distant from the field oxide film. Accordingly, it is unlikely that electrons present in the depletion layer of the pn junction between the anode region and the cathode region are trapped in

the field oxide film to expand the depletion layer of the pn junction. Thus, the claimed invention can solve the problem of increase in breakdown voltage of the diode. These advantages are described on page 3, line 26 to page 4, line 9 of the specification.

Thus, the teachings of Canclini, Yasaitis and Wolf, either individually or in combination, do not teach or suggest a semiconductor device including all the limitations recited in claim 1. In the instant case, the pending rejection has not established *prima facie* obviousness of the claimed invention as recited in claim 1, because the proposed combination fails to satisfy the all claim limitations standard required under §103. *See In re Royka*, 490 F.2d 981.

It is also noted that if an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Accordingly, as claim 1 is patentable for the reasons set forth above, it is submitted that dependent claims 2, 5 and 9 which respectively depend from claim 1 are also patentable. The Examiner's additional comments with respect to the claims do not cure the argued fundamental deficiencies of the proposed combination of Canclini, Yasaitis and Wolf.

Accordingly, Applicants respectfully solicit withdrawal of the rejection of claims 1, 2, 5 and 9 under 35 U.S.C. §103(a) and favorable consideration thereof.

Conclusion.

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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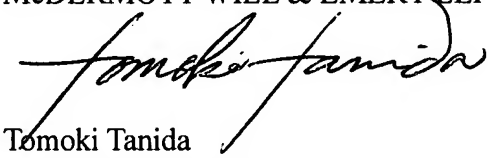

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